DEVELOPING TALENTS

FOR AN

ELECTRIFYING FUTURE

Small in size, Big on Impact
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with Youths for
Youths**
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**Navigating
Unchartered
Territories in my
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Industry**
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Benefits of SSIA Membership

Business networking opportunities

Knowledge sharing platform with government agencies

Extensive market outreach and branding opportunities

Leadership and master class trainings

Priority access to industry benchmark data and directories

Priority in customised talent outreach programmes

To connect with us visit https://ssia.org.sg

For more information about membership visit https://ssia.org.sg/join-us/

SSIA Welcomes New Members

CAD-IT | Clean-tech SERVICES PTE LTD | 福泉豐 HCH Solving Tomorrow's Problem Today | MMi

FOREWORD BY
Executive Director

On behalf of SSIA, I would like to wish all readers a wonderful 2023!

As we wrapped up a year of highs and lows in 2022, there are still a lot of uncertainties that abound globally as we start off the year. Around the world, there are signs that the global economy is projected to face strong headwinds: mounting energy costs, geopolitical tensions, rising inflation and disruption in supply chains.

These challenges have put our industry and companies' mettle to the test as we try to navigate our way and weather the storms ahead. Notwithstanding these trials in the second half of last year, we still managed to hold one of our highly anticipated and successful event – SSIA Summit and Semiconductor Dinner with the highest number of attendees last year.

Some of the key factors that helped companies to ride out the pandemic were collaboration and co-innovation as companies come together to innovate in various ways, from developing solutions to coming up with new business concepts. And it is with this same spirit of collaboration that will allow companies to leverage each other's unique expertise and resources. As one of SSIA's 3 key mainstreams, we will continue to foster this close collaboration of SMEs with larger and more established players in the industry so as to strengthen the local ecosystem.

SSIA will also keep a pulse on burgeoning opportunities with global partners that will impact potential investors' appetites into Singapore. This will provide a myriad of growth and opportunities for companies to step in and fill the gaps.

We will also continue to push forward with our 2 other key priorities – Sustainability and growing a robust pipeline of talents. With manufacturing as one of the most energy-intensive sectors, environmental sustainability in the spheres of renewable energy and water, remains a real concern for the industry. SSIA will set up a Sustainability committee comprising of key industry leaders to lead this dialogue this year.

Building a strong robust talent pool remains top of mind. With about 2000 jobs expected to be created in the next three to five years in our sector, the burning question will be where and how do develop these talents and to retain them. More importantly, besides mid-career switchers, the aim of most companies is to steer the youth as their career of choice.

SSIA's first of our annual flagship events for the year – **Electronics Industry Day on 17 January 2023** at ITE College Central will tackle this endeavour. This year's Electronics Industry Day will include 2 highlights – Firstly, a MOU to be signed between ITE and SSIA to foster partnership will be conducted between the two institutions. Secondly, the Semiconductor Active Youth Ambassador Programme will be announced. This first-ever initiative in the industry will set in motion a series of activities to develop the younger generation to become the voice for our industry; from a one-on-one mentoring with industry leaders of queen-bee companies to inculcating interest and knowledge.

As the saying goes, "A Spark can start a great fire" as SSIA keeps flame and passion of our industry alive, starting from the young minds.

ANG WEE SENG
Executive Director
Singapore Semiconductor Industry
Association (SSIA)

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Be Our Sponsor

SSIA EVENTS
Mark Your Calendar

17 JANUARY 2023
Electronics Industry Day

The Electronics Industry Day is a unique platform that brings together diversified businesses and partners within the semiconductor and electronics ecosystem to showcase our industry's vibrancy and resilience to both young talents and mid-career job switchers, looking to pursue a career in the sector. Be a catalyst in building talent for the industry.

7-10 FEBRUARY 2023 & 28 FEBRUARY - 3 MARCH 2023
Singapore Semiconductor Leadership Accelerator

A custom program designed to inspire emerging technical and business leaders to continue creating revolutionary possibilities with semiconductors. It was conceived as part of the Singapore Semiconductor Vision (SSV) 2020, a taskforce comprising the private and public sectors to increase competitiveness in Singapore's semiconductor manufacturing industry. Delivered as two modules, the programme is an immersive hands-on learning experience designed to accelerate personal and professional growth for leaders to succeed in the increasingly volatile, uncertain, complex and ambiguous (VUCA) global environment.

9 MARCH 2023
Semiconductor Women's Forum

Launched in 2021, organised by the Singapore Semiconductor Industry Association (SSIA) and supported by EDB, WSG, e2i, Global Semiconductor Alliance and the Semiconductor industry. This event aims to raise awareness on diversity and inclusion, attract more female talents to join the semiconductor industry, and inspire the current female workforce to stay and thrive in the industry.

APRIL 2023
Semiconductor Business Connect 2023

Backed by the MNCs, this platform aims to strengthen and grow the local Semiconductor and Electronics ecosystem by facilitating innovation through business collaboration. With a focus to grow businesses, Semiconductor Business Connect aims to connect the Semiconductor network, to innovate solutions and collaborate for success. The business forum will include keynote presentations from supporting agencies that will help business leaders develop strategies of the future, discuss trending current affairs topics such as supply chain disruptions and sustainability in manufacturing. Most importantly, providing business matching opportunities, connecting manufacturers and solution providers to optimize operations through Industry 4.0, sustainable manufacturing and supply chain management.

Find out more at secretariat@ssia.org.sg

SSIA
Singapore Semiconductor Industry Association

TRAIN, UPGRADE & RESKILL

As the semiconductor and electronics sector strengthen our local ecosystem and relook at ways to attract and retain talents, training, up or re-skilling and upgrading remain critical in staying relevant and future-proofing ourselves. Check out programmes in the pipeline, brought to you by SSIA and our learning partners.

REPUBLIC POLYTECHNIC

- Introduction to Vacuum and Plasma Technology (1 day)
- Microscopy and Thin Film Characterization for Failure Analysis (1 day)

SP Singapore Polytechnic
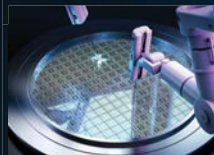
- Wafer Fabrication in Semiconductor Industry (3 days)
- Digital Integrated Circuit (IC) Testing

Temasek POLYTECHNIC

- Advanced Manufacturing Inspection Workshop (4 days)

SSIA Singapore Semiconductor Industry Association

- Semiconductor Processes (2 days)

Check out **SSIA website** or scan the QR code for full list of events, training and courses. Or contact Teresa at *teresa@ssia.org.sg*

SINGAPORE SEMICONDUCTOR LEADERSHIP ACCELERATOR PROGRAMME

Run 8

Programme Dates:
7–10 February, 28 February–2 March 2023

The Singapore Semiconductor Leadership Accelerator (SSLA) is designed to inspire emerging technical and business leaders to continue creating revolutionary possibilities with semiconductors. It was conceived as part of the Singapore Semiconductor Vision (SSV) 2020 taskforce – comprising members of private and public sectors – to increase competitiveness in Singapore's semiconductor manufacturing industry.

Delivered as two modules, the programme is an immersive hands-on learning experience designed to accelerate personal and professional growth for leaders to succeed in the increasingly volatile, uncertain, complex and ambiguous (VUCA) global environment.

The upcoming 8th run conducted by Singapore Semiconductor Industry Association (SSIA) and Human Capital Leadership Institute (HCLI), will take place in **February/March 2023**.

WHO IS THIS PROGRAMME FOR?

Senior level managers and directors, with more than 15 years of experience, who are part of the company's succession plan with responsibility for strategic deci-sion-making, and this includes heads of business units and senior managers.

INTENDED LEARNING OUTCOMES

1. Comprehensively understand the evolving role of leadership in the context of the global workforce landscape and the semiconductor industry.
2. Gain insight into business model innovation and the alignment with business strategies.
3. Learn about best practices in people management, team building, and organisational leadership.
4. Acquire an in-depth understanding of how aligning sustainability efforts and strategies with business outcomes can be a competitive advantage.
5. Create strategies to help organisations identify, recruit, develop and train top talent.
6. Develop networking strategies with leaders from the business, government, and academia.

SSLA – A DIFFERENTIATED LEARNING EXPERIENCE

1. Be inspired to continue creating revolutionary possibilities within the semiconductor industry.
2. An immersive hands-on learning experience designed to accelerate both personal and professional growth to succeed in a VUCA environment.
3. Real-life experience sharing by business and thought-leaders from the industry.
4. Interactive and experiential workshops with relevant case studies and discussions.
5. Action learning projects designed to address industry specific challenges.
6. Networking with leaders from the business, government, and academia.

COURSE FEE
S$12,000/pax* (subject to GST)
Subsidy is applicable to Singaporeans only.

For more information or enquiries, please contact **velinda@ssia.org.sg**

BROUGHT TO YOU BY

SSIA Singapore Semiconductor Industry Association

SSIA
Singapore Semiconductor Industry Association

Semiconductor Women's Forum 2023

Thursday, 9 March

Transformation with the Power of Diversity and Inclusion

Join us as we **#EmbraceEquity** for all in the Semiconductor industry as part of International Women's Day 2023.

Find out how you can be part of the action:

If you would like to support or sponsor this event, email us at **secretariat@ssia.org.sg**

Growing with us

OUR COMPANY

Hoya Electronics Singapore Pte Ltd was incorporated in Singapore on 10th June 2011. Currently our staff strength is 302 employees as of 30 November 2022.

Our company core business is developing and manufacturing of mask blanks. Mask blanks and photomasks are essential in the production of semiconductor chips. They are the master plates used to transfer the minute, highly complex circuit patterns for semiconductors onto the wafers that become IC chips.

We would like to take this opportunity to share that our Division President, Mr. Geoffrey Maroun Akiki had just won the Business Management Excellence Award "Executive for the Year" FY2022 by Singapore Business Review. This award proves that our leaders are on the right track in engaging and building teamwork and trust amongst our employees.

BUSINESS Management Excellence Awards 2022

WHY TALENTS SHOULD JOIN OUR COMPANY

We are a premium Company who have been awarded by Singapore Business Review on Business Excellence Management 2022. Have a peace of mind with the security of working in our stable Company. You can also enjoy the many perks and highly competitive benefits offered to you such as hybrid working model, portable healthcare services, etc.

OUR JOB OPENINGS

- Clean Engineer
- Staff Automation Engineer
- Associate Process Engineer, Deposition
- Application Engineer, Development
- Senior NPI Engineer, Development
- Assistant Engineer, Development
- Production Supervisor
- Executive, Production Control
- Associate Executive, Production Control
- Associate Executive, EHS
- Manager/Senior Manager, Procurement
- Finance Analyst/Senior FA, Financial Planning and Analysis
- Maintenance Technician
- Automation Technician
- Inspection Technician
- Production Technician
- Logistics Assistant

Come join us and build your dream career with us! Interested applicants, do drop us an email together with your resume at **HOES-recruitment@hoya.com**

For information on each position, please refer to the job advertisements on JobStreet or email us to find out more.

We look forward to having you join our Hoya Electronics family!

CONTRIBUTED BY

HOYA

The First-Ever Semiconductor Active Youth (SAY) Ambassador Programme

We all are aware of how talent is integral to any industry and especially with the Semiconductor sector as it is one of the most important contributors to our economy.

The essence of this one-year programme is to create a robust pipeline of young talents for the semiconductor industry, working in close partnership with both the Institutes of Higher Learning (Polytechnics and Universities) and companies. The programme will allow the student ambassadors who have been identified by their IHLs to gain valuable insights and hands-on experience in the semiconductor industry, training and mentorship opportunities with industry leaders from the companies across the value chain. Companies will pair the mentors with the ambassadors and to also provide with relevant industry content. To pilot this programme, six queen bee companies will be participating in the first year – AMD, ams Osram, GlobalFoundries, Institute of Microelectronics, Micron and Tokyo Electron Singapore.

These student ambassadors will be the future of our industry and a voice to influence their peers to the industry through their vision and passion.

Student ambassadors who have been identified to participate in this programme will be supported by the following:

1. Internship and continuous engagement with companies to gain a deeper understanding of the industry.
2. Community activities and initiatives, with content and support from companies through summer camps and workshops
3. One-on-one engagement with Mentors from the industry to guide these students' careers along the way
4. Continuous engagement with industry leaders through various SSIA platforms

These future leaders will be empowered to create positive change, represent the student community through activities and more importantly, to bring a different perspective to the industry.

This programme will be launched on 17 January 2023 at the Electronics Industry Day.

CONTRIBUTED BY

YVONNE NG
Head of Marketing and
Communications, SSIA

Interview with
SUN XUAN

Tell us more about yourself. What are your hobbies and interest?

I am passionate in studying analog electronics but there are times to take breaks and develop other skills. I have many hobbies and interests, such as reading novel, jogging and drawing. I spent most of my free time on art. Although I was in the science stream, I took Art as one of my subjects in 'O' Levels. I chose to study Information Engineering and Media (IEM) in the beginning is also due to art. I like to draw and do interior design during free time at my own pace.

What got you into the current course that you are taking now?

My interest with circuits started when I was in secondary school. The physics lessons taught by Mr Tan was fun. However, I did not foresee that I would have a passion for analog integrated circuit (IC) design before my Undergraduate Professional Internship in year 3 semester 1. It was an unexpected opportunity. I was offered to be a design engineer (intern) in Singapore Changi Technology (SCT). At the same time, I was offered an URECA project to design an Op-Amp. Before that, I was clueless about my future career. The experience with Analog IC Design during the internship and the URECA project was fruitful and brought back good memories of learning circuits in my secondary school days. I believe Analog IC Design is a career that I can do for years. Without any doubts, I submitted my application for change of program to Electrical and Electronics Engineering (EEE) to build a strong foundation for circuit design, the application was successful.
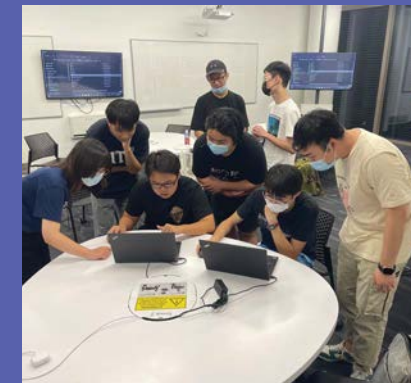
Who inspires you the most so far?

My secondary school teacher, Mr Tan Siang Hwa (James) inspired me the most. With his passion in teaching physics, I became interested in learning circuits. Followed by my URECA project professor Siek Liter and my colleagues in my internship company SCT. All of them are very passionate and patient in teaching circuits.

How do you feel to get into a course such as IC Design that is quite niche?

I wish to follow my passion and I am very thankful to Nanyang Technological University that my application to change program from IEM to EEE was successful.

What are your aspirations?

Live a decent life and make some achievements in my career. One of the achievements can be designing a circuit that has minimum offset together with small size, low voltage and high gain.

How do you feel being a Semiconductor Active Youth Ambassador?

I feel fortunate. It is a good opportunity for me to learn more about the industry. It is also a rare opportunity for me to show my gratitude to people who inspired me by giving back to the society and share my passion for the industry with others.

What is the one advice that you would like to share with your peers on the semiconductor industry?

Start internship early to find your passion in the semiconductor industry.

What excites you in this semiconductor industry?

It is my passion to work in the semiconductor industry. In addition, the semiconductor industry in Singapore is growing and there will be many future opportunities.

CONTRIBUTED BY

MS SUN XUAN
NTU, School of Electrical and
Electronics Engineering
IC Design (3rd Year)

Interview with
TEO ZHI SEN

Tell us more about yourself. What are your hobbies and interest?

Ever since after National Service, I have an interest in technopreneurship in the semi-con industry. Aside from those interests, I also enjoy doing physical activities, mainly Powerlifting and Climbing, in my free time!

What got you into the current course that you are taking now?

Given my interests in semi-con and autonomous robotics, I was attracted to Engineering Science's Nanoscience and Technology and Computational Engineering specialisations. I felt that Engineering Science could give me the breadth and depth in terms of the basic knowledge I require to be a specialist in my field of interest.

How do you feel being a Semiconductor Active Youth Ambassador?

I am very grateful and honoured to be given this opportunity. As an Engineering student, I have seen my peers not valuing networking and mentorship opportunities as much. I hope in the future, from student to student, I can bring such opportunities to them and show them the value of those opportunities.

Who inspires you the most so far?

I am incredibly inspired by NUS's Institute of Engineering Leadership's Programme Director, Dr. Ignatius, who has worked in both industry and research while possessing entrepreneurship experience. He has been a role-model and mentor to me, showing me that life is not just about results but also about the process.

What are your aspirations?

After graduation, I would want to gain knowledge in the semiconductor industry, understand the problems in the industry and try to solve them. I aspire to be a product or project manager within the first 5 years of graduation and work towards becoming a Technopreneur in the semiconductor industry in the future.

What is the one advice that you would like to share with your peers on the semiconductor industry?

It is normal to not understand the industry as a student. Even experts don't have deep knowledge in every single step of all the manufacturing processes. What is most important for us now is to actively pick up opportunities that can allow us to learn more about the industry, for example, company visits or career talks.

What excites you in this semiconductor industry?

I am more interested in the IC design component of the industry. Creating designs for chips or other semi-con products is like creating a blueprint for an entire city. I am excited about the endless possibilities of how much we can progress and the huge benefits that different reliant industries in the world can reap from our R&D.

CONTRIBUTED BY

MR TEO ZHI SEN
NUS, College of Design and Engineering, Major in Engineering Science with Specialisation in Nanoscience and Technology (2nd Year)

Interview with
SAMUEL ONG

Tell us more about yourself. What are your hobbies and interest?

Hi, I'm Samuel and my hobbies mostly just goes down to what I'm interested in at that time so I'm really a jack of all traits guy so either skating, ice skating, guitar, basketball, cubing or tinkering with electronics basically anything that keeps me engaged and have something to do! My interest currently is in semiconductors technology especially the wafer fab process and of course engineering!

What got you into the current course that you are taking now?

My electronics secondary school teacher! He was really a role model for me, and he made electronics fun and engaging which is no easy feat. I found that not only did I enjoy what he taught I wanted to grow myself in more specific areas of engineering thus SP is known to be the best in engineering thus I decided to join EEE!

Who inspires you the most so far?

Definitely my parents, as an only child I don't have anyone else to rely on in terms of doing well thus it's a lot of pressure to be a good student and son however my parents are so supportive and understanding in what I do it really just motivates me to be a better version of myself holistically and mentally every day!

What are your aspirations?

I like to help people in general. I have volunteered and participated in a wide variety of events and through these, i have realised that my passion lies in teaching. Being able to be an inspiration and a mentor really resonated with me and I

would like to be a mentor in the future who can make a difference.

How do you feel being a Semiconductor Active Youth Ambassador?

I'm extremely grateful for the opportunityto have a mentor to guide me. I have great interests in the semiconductor industry and being able to have a mentor guide me into it would really make me more comfortable and fit in. I feel that SSIA taking interest in youths to making a difference is definitely a step to go in the right direction.

What is the one advice that you would like to share with your peers on the semiconductor industry?

Go for the open house hosted by semiconductor companies! Personally, I have been to Global foundries, Micron and AMD open houses and the insights into each company would

help anybody. You get a really in-depth look into how each company operates and how connected each company is. This could even help you secure a job in the future.

What excites you in this semiconductor industry?

I think most definitely the ability to constantly grow, development of chips gets faster and faster and the chips keep on getting smaller for example Samsung foundry started to mass produce 3nm chips and I think they are in talks about mass producing 2 or 1.4 nm chips in 2027 so it's really exciting to be in an industry that is ever growing and evolving.

CONTRIBUTED BY

MR SAMUEL ONG
Singapore Polytechnic, School of Electrical and Electronics Engineering (2nd Year)

Passing it Forward with Youths for Youths

Interview with
TEO LI SHI

Tell us more about yourself. What are your hobbies and interest?

I am Li Shi, a Year 3 Electrical Engineering undergraduate student, pursuing a degree in Bachelor of Engineering with Honours. Having graduated from Ngee Ann Polytechnic and pursuing the same course, I am a direct-polytechnic student at NUS and currently taking a 3.5-year course. My interest lies in social activities, so I partake in extracurricular activities such as the Electrical and Computer Engineering Club and Community Service Club, L-derly Befrienders, where I volunteer for the community.

What got you into the current course that you are taking now?

Since I joined Ngee Ann Polytechnic Foundation Programme in 2017, I was under the engineering cluster where I enrolled on Year 1 Electrical Engineering as a diploma student.

Hence, when I was in my first year, I joined as an engineering student ambassador, where I took part in many outreach events.

Academically, I did a final year project where many objectives were self-initiated and explored thus, I was deeply fascinated by the positive outcome of each milestone completed. Ever since taking on the diploma and taking part in many engineering-related activities and academics, I decided to continue and venture deeper within this course to further stretch my knowledge of Electrical Engineering.

Who inspires you the most so far?

I would say joining Energy Ambassador Programme (EAP) organised by the Energy Market Authority inspired me to continue studying Electrical Engineering when I was a diploma student. Joining the learning journeys and deep-dive sessions has shown me the industrial side of things and to better gain relevance from what was taught in in-class lectures. Hence it peeped my curiosity about what is in for the future of engineering and for the energy sector.

What are your aspirations?

My aspiration is to be an engineer with a heart and to be able to contribute something to the community. No matter how small the problems and ideas are, I hope to take part in something meaningful that can be a small change that may mean a greater favour for others.

How do you feel being a Semiconductor Active Youth Ambassador?

I feel curious and optimistic about being a Semiconductor Active Youth Ambassador. Similar to EAP, I hope that SAY will open new doors and insights within the semiconductor industry. So that I can share what I learnt and hopefully, pique the interest of potential students from my sharing.

What is the one advice that you would like to share with your peers on the semiconductor industry?

One piece of advice that I would like to share with my peers would be, is the semiconductor industry will always be relevant as with the ever-growing digitalisation, the usage of electronic devices increases. Hence, the demand for wafers will remain intact.

What excites you in this semiconductor industry?

I think what excites me is how crucial the semiconductor industry is to be part of the digitalisation era. As with multiple wafers and integrated circuits combine, it can digitalise something such as smartphones and automobiles. Hence, it will be exciting to see what the futuristic plans for the semiconductor industry are.

> **CONTRIBUTED BY**
>
> **MS TEO LI SHI**
> NUS, School of Electrical
> Engineering (3rd Year)

Interview with
CHIN KIAT

Tell us more about yourself. What are your hobbies and interest?

Some of my hobbies include playing badminton and watching videos that interest me. One of the videos I watched recently was an introduction to ethical hacking. I am also keen to pick up new skills. For example, one of my interests now is learning new programming languages.

How did you end up in the course that you are taking now?

I am currently in the Electrical and Electronic Engineering course. I chose this course because in secondary school, I took Electronics as a subject, and it sparked my interest in the field. It made me want to know more about electronics as learning about how it is applied in different circuits is interesting.

Who inspires you the most so far?

It was also the first time I started coding and realised that coding can be fun and simple. This was when I started to develop an interest in both coding and programming. This was also very useful as in the Electrical and Electronic Engineering course, we learned the programming language, C++ to program Arduino boards.

I felt grateful that I managed to get into the Electrical and Electronic Engineering course as this is a field that will continue to grow over the years. This is because the field forms the foundation of many technologies. I also feel that this course will give me better job security compared to other courses because during times like the pandemic, the technology field grows exponentially, and it is indirectly linked to the growth of the semiconductor industry as the demand for chips increases.

I aspire to pick up more skills to have better job security during times like an economic downturn. Having a wider range of skillsets allows me to switch fields easily without worrying about whether I would be able to find a job in the same field.

I feel very honoured to be a Semiconductor Active Youth Ambassador as not everyone has this opportunity. I also feel that this role would help to broaden my horizon as it gives me an insight into what the semiconductor industry does. Not everyone has a chance to learn how IC chips are made so I feel very honoured and grateful to be given the opportunity to do so.

What is one advice that you would like to share with your peers in the semiconductor industry?

I advise my peers to always continue upgrading themselves to stay relevant to the industry as it evolves quickly and drastically over the years. This is because the semiconductor industry has great potential to evolve. For example, in 1958, the semiconductor industry used the microchip technology to build ICs, and nanochip technology was invented in 2000 and is still used today. Hence, I feel that this technology will continue to evolve and we must stay relevant to the changes that take place.
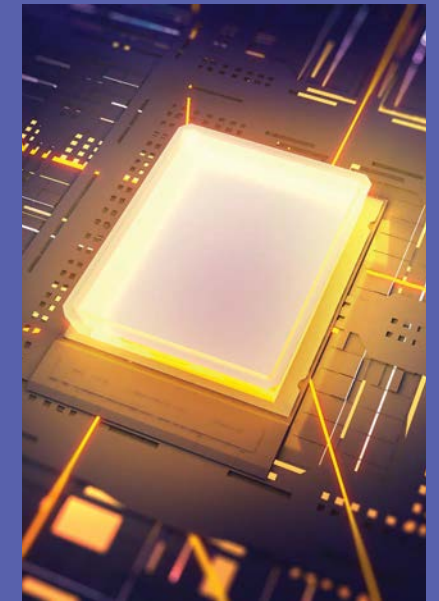
What excites you in this semiconductor industry?

The nano chip technology excites me because it is an evolving technology that is used in the industry. In the future, I think that the evolution of this technology will lead to pico chips!

> **CONTRIBUTED BY**
>
> **MR YEO CHIN KIAT**
> Singapore Polytechnic,
> Electrical and Electronic
> Engineering (Year 1)

Interview with
YEOW SIN

Tell us more about yourself. What are your hobbies and interest?

I am Lek Yeow Sin, current Year 3 Mechanical Engineering Undergraduate from NUS. My interest lies in Digital Transformation and Manufacturing, mainly Additive Manufacturing and System optimisation. Some of my hobbies are exploring good food and binge-watching drama series.

What got you into the current course that you are taking now?

Mechanical Engineering is one of the most versatile engineering courses available which allows me to branch out to many industry choices. Throughout the course, I learned modules which covered topics from many different courses, further confirming my interest in the area.

Who inspires you the most so far?

My mentor from my previous internship in SGInnovate really inspired me greatly. While helping me to grasp all the necessary technical knowledge and skills, he has also taught me soft skills such as stakeholder management. This is when I realise that networking skills and building good connections are important, hence my decision to join the Semiconductor Active Youth Ambassador Programme.

What are your aspirations?

My aspiration is to be able to contribute to the society with the engineering knowledge and skills that I have learnt and equipped myself with. I hope to work with a group of like-minded friends, coming out with innovative solution to tackle real-world engineering problems.

How do you feel being a Semiconductor Active Youth Ambassador?

It is of great honour to be part of the Semiconductor Active Youth Ambassador. Through this programme, we will be given many opportunities to engage industrial partners from the whole industry and I believe that I will definitely be able to find a place which suits me. In addition, I will also be able to understand the semiconductor industry deeper and keep myself updated on the happenings in the industry.

What is the one advice that you would like to share with your peers on the semiconductor industry?

Always keep an open mind and keep your options open, don't dismiss any possibilities as you won't know what the future holds.

What excites you in this semiconductor industry?

Industrial 4.0 is happening and there are endless possibilities in the semiconductor industry, and I am excited to take on any challenge.

> **CONTRIBUTED BY**
>
> **MR YEOW SIN**
> NUS, School of Mechanical Engineering (3rd Year)

Interview with
RUSHABH GALA

Tell us more about yourself. What are your hobbies and interest?

I am Rushabh Gala, a Year 3 Material Science and Engineering student from NUS. My interests are solving puzzles and cycling as I find them both meditative and refreshing.

What got you into the current course that you are taking now?

The uniqueness and vast application of the knowledge of Material Science and Engineering attracted me to the course. For instance, I was fascinated when I learnt about the various crystal structures and symmetries present in materials and the way they impact the properties of the material.

Who inspires you the most so far?

Currently, my biggest inspirations are my university professors. Reading about their research and studying under them really inspires me to dive deeper into the study of the various materials present in the Semiconductor industry.

What are your aspirations?

I aspire to be an entrepreneur in the Semiconductor industry. I hope to, one day, have my own company that significantly contributes to the Semiconductor industry.

How do you feel being a Semiconductor Active Youth Ambassador?

I feel honoured to receive the responsibility of being the voice of the Youth. It feels like I have the power and opportunity to inspire them to develop an interest towards the Semiconductor industry.

What is the one advice that you would like to share with your peers on the semiconductor industry?

The one advise that I would give to my peers is to be perseverant and patient with the industry. It may, relatively, have a paced growth but the impact of that growth is quite significant.

What excites you in this semiconductor industry?

Being an MSE student, new and upcoming materials in the Semiconductor industry, that have the potential to revolutionise the way we view and use technology, is what excites me.

> **CONTRIBUTED BY**
>
> **MR RUSHABH GALA**
> NUS, Material Science and Engineering (3rd Year)

Interview with
BRYAN CHIA

Tell us more about yourself. What are your hobbies and interest?

I am an extrovert who enjoys exploring and learning new things because it broadens my perspective on the world. I also enjoy being a leader because it allows me to help my members achieve great things together, and I believe that teamwork is the key to success. During my free time I would help out in community event as I am a member of the Sembawang West Youth Network. I would also keep up with current world events and the latest technological news.

What got you into the current course that you are taking now?

I chose Engineering with Business because I want to be exposed to both the engineering and business sectors. My course teaches me the fundamentals of engineering, which will help me understand the various fields of engineering. As it would give me enough exposure to decide which sector to pursue when I start university, as I intend to enrol in an engineering course.

Who inspires you the most so far?

Elon Musk has been an inspiration to me because of his perseverance and interest in technology and artificial intelligence. His future vision and determination to bring humans to MARS had inspired me to do great things for humanity as well.

What are your aspirations?

In the future, I hope to be a technopreneur. My ambition is to develop products and/or services that will benefit others in the future. I would also like to use the proceeds to benefit the communities by donating or constructing infrastructure.

How do you feel being a Semiconductor Active Youth Ambassador?

I feel honored because I will be given opportunities and exposed to facilities and equipment that the general public would not be able to visit. This opportunity would provide me with a better understanding of the Semiconductor industry.

What is the one advice that you would like to share with your peers on the semiconductor industry?

Semiconductors are an essential component that serves as the foundation for all electronic devices. As engineering students, we would need to have a basic understanding of the semiconductor industry because it is the foundation of our future engineering journey.

What excites you in this semiconductor industry?

Being exposed to technology and facilities that the general public does not have access to. View the most recent advancements in the semiconductor industries with the help of mentors.

CONTRIBUTED BY

MR BRYAN CHIA
Singapore Polytechnic,
Electrical and Electronic
Engineering (Year 2)

Interview with
ANDREW LEE

Tell us more about yourself. What are your hobbies and interest?

I am interested in 3D modelling and coding as I can create stuff without being restraint by the physical limits. I am also playing video games that requires me to think like sudoku puzzles and crossword puzzles, or games that requires other people to clear a certain goal as a team.

What got you into the current course that you are taking now?

My curiosity in getting to know how things work exactly have made me decided to take the current course. Like how solar panel works and what makes it capable of generating electricity using sun light.

Who inspires you the most so far?

The ones that inspire me the most so far would be my parents. Even though they are divorced, they both let me have the freedom to choose whichever path I want to take and give me their full support on the path I am walking down, even till this day.

What are your aspirations?

I aspire to improve people's standard of living through the advancement in technology.

How do you feel being a Semiconductor Active Youth Ambassador?

I am happy and honoured to have been recommended by the school for this opportunity as it allows me to gain more knowledge and experience on the semiconductor industry.

What is the one advice that you would like to share with your peers on the semiconductor industry?

Never give up when something is difficult as you can only grow when you are out of your comfort zone.

What excites you in this semiconductor industry?

Knowing that I would be doing something that helps improve the standard of living, no matter how small it may be.

CONTRIBUTED BY

MR ANDREW LEE
School of Electrical and
Electronics Engineering
Republic Polytechnic

Interview with
WONG SHAO RONG JOEL

Tell us more about yourself. What are your hobbies and interest?

I am Joel. My hobbies include playing classical and pop songs on my guitar. A year ago, I became fascinated with horology – the study of the measurement of time, mostly from the complications achieved by such minuscule and low-tolerance manufactured gears and components.

What got you into the current course that you are taking now?

I took Electronics during my 'O' Level. I enjoyed it and was good at it. While I was researching what I wanted to do after graduation, I discovered SP offered the Diploma in Electrical and Electronic Engineering. In the final year, I can choose one of the six specialisations offered, making this course very useful for the ever-changing job market.

Who inspires you the most so far?

I recently came across Tony Robbins on YouTube where he spoke to a suicidal man. The man shared that he had goals for himself, but wasn't able to accomplish them. So he felt like a failure. Tony Robbins reassured him, telling him that "there is still time". Despite being a successful businessman, he still shows compassion for strangers.

What are your aspirations?

Education-wise, I aspire to attend university. I also consider studying for a Master's or Doctorate. Career-wise, I would probably work for someone first to learn the "ins" and "outs" of the industry and maybe start my own business after that.

How do you feel being a Semiconductor Active Youth Ambassador?

I am honoured and humbled to be appointed a Semiconductor Active Youth Ambassador. Through this experience, I hope to learn more about the semiconductor industry and discover what this mega industry has to offer. I could even convince some of my peers to take an interest in semiconductors.

What is the one advice that you would like to share with your peers on the semiconductor industry?

The semiconductor industry may be in a challenging position now, where the demand for semiconductors has been over projected. However, it will continue to grow as all the new electronic devices and software require such components.

What excites you in this semiconductor industry?

I am excited to know the limits of manufacturing. Currently, the standard length of transistors is 10 nanometres and with the latest research, top companies have produced 5mm or 7mm. Just 50 years ago, the smallest was 10 µm, more than 1500 times longer than today's. So I am excited to see how small transistors can be in the next 50 years.

CONTRIBUTED BY

MR WONG SHAO RONG JOEL
Singapore Polytechnic,
Electrical and Electronic
Engineering (Year 1)

Interview with
JULIET TANG

Tell us more about yourself. What are your hobbies and interest?

I'm Juliet Tang, a Year 2 student studying Electrical and Electronic Engineering at Singapore Polytechnic. To name a few of my interests, they are music, reading, sports as well as gaming!

What got you into the current course that you are taking now?

I would say my love for math and science.

Who inspires you the most so far?

AMD! We went on a school visit to AMD and learnt a lot about the semiconductor industry. I was inspired by the work they did there.

What are your aspirations?

I aspire to improve healthcare technology for the disabled!

How do you feel being a Semiconductor Active Youth Ambassador?

I feel honoured to have been shortlisted for this programme and I'm looking forward to learning from the different companies we will be attached to.

What is the one advice that you would like to share with your peers on the semiconductor industry?

On advice I would share is to stay consistent. You don't always have to push yourself beyond your limits, but instead, stay consistent in the effort placed in the work that you do, and you will be able to achieve the same results!

What excites you in this semiconductor industry?

What excites me the most is watching how everything works once it is assembled or learning about how each component works and how it impacts the product as a whole.

CONTRIBUTED BY

MS JULIET TANG
Singapore Polytechnic,
Electrical and Electronic
Engineering (Year 2)

Interview with
NANHAN

Hi my name is Nanhan. I am 20 years old and a year 3 student in Singapore University of Technology and Design (SUTD), pursuing my electrical engineering bachelor's degree. I will graduate in May 2024.

I am a person who is always curious and open to try new things. I like travelling and doing sports (table tennis, swimming, badminton etc.), I learned table tennis in SUTD and I keep practicing it, and it is one of my favorite sports now. I like drawing as well, and I learned how to sketch online in my free time.

This semester, I went on exchange to Belgium, and I am taking four courses: Analog & Digital Electronics, Opto-Electronics and Power Devices, Machine Learning and French A1. I am interested in MedTech related circuit design, IC design and sensors. I took these courses because for the first two, they are related to my interests and quite useful. The Analog & Digital Electronics includes both concepts learning and lab sessions, which I found very useful and interesting. It taught me about building circuits and the programming on FPGA boards using VHDL. While for the module of Opto-Electronics, it is more about the basic concepts for semiconductors. It explains how the electronics we are using works behind. The Machine Learning is more and more important and useful nowadays, it can be applied to many fields, hence

I took this module. (And the university I exchange to is in the French region of Belgium, so I want to learn some French to make life here easier and get to know the local culture better.)

So far, I have done one internship in a semiconductor industry which is Systems on Silicon Manufacturing Company (SSMC) when I was in year 1 in SUTD, so I didn't do anything that related to semiconductor too much yet because at the time I didn't even start to learn anything on this field. But I will say that it is a great step from zero to one, and I get to know semiconductor industry more. It is a quite an important topic that can be applied to many other fields and to make life easier. I did this internship during the Covid-19 pandemic, a time when semiconductors were very scarce, which made it even more important to me.

To get into a course such as IC Design or other niche courses, I feel like it will definitely be helpful for people who are willing to delve deeper and develop their skills in their interested field. However, there might be a problem where less people will get into the course, since the scope is quite narrow. But for me, of course, I am happy to join a course about IC design.

I have a strong interest in MedTech and recently I found the brain-computer interface very interesting. I wish I can have an internship doing related topics after my exchange. In the future, I hope I can contribute to healthcare from an electrical/semiconductor perspective, for example faster diagnosis of severe diseases using biochip, help the disabled live easier, etc.

It's my honor to be a Semiconductor Active Youth Ambassador, and it will bring me more opportunities and responsibilities. I feel excited and a bit pressured, but I hope I can fill this role and do a good job helping younger generations know more about the semiconductor industry, gain more opportunities to work with the industry, and attract more people to join

us. I hope I can be the bridge to help my peers cross the gap between university and the industry.

My advice to share is when we encounter difficult troubles while studying or working, don't be anxious and don't give up, we should calm down, keep looking forward, and try our best. Based on my own experience, I found that semiconductors are not an easy thing to study and it is advanced technology, so it will definitely require more effort. We also need to broaden our horizons and self-study after the school study, since to be able to work in the semiconductor industry, what we learn in school is not enough.

The thing in the semiconductor industry that excites me the most is its potential. There are lots of things that haven't been explored in this field, and for myself, I hope I can develop more applications of semiconductor on healthcare.

CONTRIBUTED BY

MS LIU NANHAN
SUTD, Electrical Engineering
(3rd Year)

What Makes the
Semiconductor World

The memory market is also experiencing faltering demand, swollen inventories, and pressure for lower prices, resulting in a forecasted 16.2% decline in revenue in 2023. Despite this, TSMC still sees 2023 as a growth year, driven by cyclical rather than structural challenges, and expects a smooth ramp for its 3nm technology in 2023. Intel Corporation, meanwhile, is attempting to regain leadership in semiconductor manufacturing, having set targets on a path to do so, and is on track to meet them. However, it still faces competition from companies such as TSMC and Samsung Electronics.

However, despite the above challenges, innovation remains as the lifeblood of the semiconductor industry, and it is especially important in the context of Industry 4.0. As advanced technologies such as artificial intelligence, the internet of things, and big data analytics continue to evolve, the semiconductor industry has an opportunity to leverage these technologies to improve operations, create new products and services, and gain a competitive advantage.

One of the key benefits of innovation in the semiconductor industry is the ability to develop new products and services that help existing businesses increase efficiency and reduce costs. One example is the usage IoT sensors to monitor equipment performance in real-time, companies can prevent

downtime and improve overall equipment utilization. Innovation is extremely important with expected rising inflation, interest rates and recession during the year of 2023.

Part 1: How will 2023 play out for some of the top semiconductor companies in the world?

Overall, innovation is essential for the semiconductor industry to remain competitive in an increasingly dynamic market. In my internship company, Let-Lab, Singapore's first industry 4.0 semi-conductor focused accelerator, we are constantly looking forward to continuously find new and better POCs to continue to drive progress and growth while serving as a key player in the semi-conductor innovation space. 2023 will be an exciting year for the industry and I am looking forward to being part of the technological breakthroughs this year.

CONTRIBUTED BY

MR TEO ZHI SEN
NUS, College of Design and Engineering, Major in Engineering Science with Specialisation in Nanoscience and Technology (2nd Year)

The semiconductor industry is a global industry that is constantly evolving as new technologies and applications are developed. It is characterized by rapid technological change and intense competition, as companies strive to develop new products and technologies to meet the needs of a rapidly changing market. It plays a vital role in the global economy and is a key driver of technological innovation and economic growth. It is an important source of jobs and economic activity, and its products are used in a wide range of industries, including information technology, telecommunications, transportation, and healthcare.

From an article in Tech Wire Asia, the global semiconductor industry is expected to experience its first contraction in four years in 2023 due to oversupply, exacerbated by the deteriorating economic situation. This is particularly impacting the smartphone, PC and consumer electronics markets, leading to oversupply in the DRAM market for the remainder of 2022 and the first three quarters of 2023. Gartner analysts predict a 2.6% decrease in DRAM revenue to $90.5bn this year and a further 18% decline in 2023 to $74.2bn.

Interview with
BARNABAS LOW

Tell us more about yourself. What are your hobbies and interest?

I am a very tenacious and determined person who believes I am my greatest adversary always pushing myself to go a little further. My interest in technology stems from my childhood when I would often fiddle with various electronics, disassembling them then piecing them back together. This is why I like studying computer engineering as it lets me be more hands-on with components while also writing code. Outside of my studies, I enjoy reading novels, and a little about philosophy and psychology.

What got you into the current course that you are taking now?

I first enrolled into Ngee Ann Polytechnic under the Common Engineering Programme. It was through the programme I discovered my interest in coding while also affirming my longtime curiosity in electronics. Hence, I chose to promote into the Electronics & Computer Engineering diploma, specializing in robotics.

Who inspires you the most so far?

It might seem cheesy or narcissistic to say but I want to say I am inspired by my younger self. I often think back to how zealously passionate I was when I was younger, always diving into my interests without care for consequence or worry for the future. During some darker periods in my life, I had lost that spark and my vision became grim. But on a very lucky day while looking through my old belongings and reminiscing, I suddenly had a desire pop into my head: "be the future your younger self was excited to live". Since then, I try to do my best in my pursuits to keep that spark.

How do you feel to get into a course such as IC Design that is quite niche?

Actually I do not feel that IC design is niche, at least in the field of engineering. IC Design is a very crucial and fundamental part for any engineering with electronics. Currently, I feel comfortable with the pace of learning but cannot help feeling overwhelmed when I see the scale of IC Design in the industry. Nonetheless, I believe that with time and effort, I will be able to produce quality work in a team as well.

What are your aspirations?

Frankly, I think I am quite simple-minded. I do not have any grand ambition for my life yet. However, my current goals are to have a fulfilling experience during my DSTA internship and continue to do well in my academics to enter NUS as an engineering scholar. Outside of academics, I want to become more financially literate and independent.

How do you feel being a Semiconductor Active Youth Ambassador?

I feel honored and proud to be selected for the opportunity. I am very grateful for Ngee Ann as well as the companies involved for allowing me to experience the industry and learn from experts.

What is the one advice that you would like to share with your peers on the semiconductor industry?

Be a little shameless. This is also an advice to myself as I often let opportunities slip by because I fear rejection or embarrassment. It is also important when learning as I tend to get too caught up in trying to get things perfect on the first try out of pride and end up wasting time in a maze of my indecisions.

What excites you in this semiconductor industry?

The semiconductor industry is doubtlessly an extremely important industry, especially as we walk forward into more digitalized times. The chance to witness and be involved in the behind-the-scenes of a such a huge industry that runs the world is very exciting to me.

CONTRIBUTED BY

MR BARNABAS LOW
Ngee Ann Polytechnic, Electrical and Computer Engineering

Interview with
DARREN TOH

Tell us more about yourself. What are your hobbies and interest?

I am currently an undergraduate in the 3rd year of the SIT Electronics and Data Engineering Course. My hobbies include playing base building games and learning German. I am also very interested in programming and chemistry.

What got you into the current course that you are taking now?

When I was young, I was intrigued by hacking scenes in espionage films. The discreet and deft manipulation of computer systems inspired me to investigate the working principles behind ICT systems. It also helped that the use of smart devices are becoming increasingly ubiquitous in all aspects of modern life, ensuring that the skills I learn from EDE would always remain relevant.

Who inspires you the most so far?

When I was in secondary school, I had a remarkable math teacher who was also an NCC officer. During CCA sessions, he was very firm and demanding, but he was very patient and approachable during lesson hours. The way he commanded respect during CCAs and joked with us outside of it left a great impact on me.

How do you feel to get into a course such as IC Design that is quite niche?

Gaining exposure to esoteric subjects under the guidance of industry professionals would certainly grant me insights and a broader horizon than my peers who had not have the same opportunities. At the very least, I would gain a certain sense of pride from adding specialised knowledge to my existing skillsets.

What are your aspirations?

I would like to contribute to the development of reliable and practical clean energy generation for our nation, and eventually the rest of the world. The speculations of many forms of fossil fuels being in danger of running out by 2050 means that renewable energy, including solar cells, would have to make up for the shortfalls. I aspire to be able to employ my knowledge to facilitate this transition.

How do you feel being a Semiconductor Active Youth Ambassador?

The opportunity to become a youth ambassador came to me as a pleasant surprise as I had never imagined that I would be nominated. This program would be a novel experience for me and I will ensure that I excel in my duties as a youth ambassador.

What is the one advice that you would like to share with your peers on the semiconductor industry?

One advice that I would share to my peers would be to consistently research into the aspects of the semiconductor industry they are interested in. Constant exposure to literature might not be able to impart deep level knowledge, but it can both serve as a refresher to the working principles behind common semiconductor devices and to update the reader to latest developments in that particular field.

What excites you in this semiconductor industry?

It is exciting to see engineers and researchers explore new ways to build semiconductor devices that surpass previous devices, despite the mounting physical obstacles. It is amazing that a product that is considered cutting-edge today could be rendered obsolete in a few short years, illustrating the tenacity advancements in the semiconductor industry.

CONTRIBUTED BY

MR DARREN TOH
SIT TUM, Electronics and Data Engineering Course

Interview with
SAMUEL KOH

Tell us more about yourself. What are your hobbies and interest?

Hi, my name is Samuel, people call me Sam. I'm currently a student from SIT-TUM Electronics and Data Engineering. My hobbies include exploring different cuisines, as well as spending time with my family and friends.

What got you into the current course that you are taking now?

Previously, I did a Diploma in Electronics in Temasek Polytechnic and have found some common ground as well as industry relevance in my current course. I also found the course's curriculum interesting as it introduces many aspects of technology.

Who inspires you the most so far?

A person who inspires me is the late great Kobe Bryant. He's unparalleled work ethic has brought him 4 NBA championships through his 20 years in the NBA. Hence, I hope to put myself in the best spots to do well by doing my best.

How do you feel to get into a course such as IC Design that is quite niche?

IC Design as a course seems interesting. However since it is in such a niche application, it may not appeal to the youth. As a suggestion, more marketing initiatives may help. For example, a day in a life videos, expected salary, demand and so on.

What are your aspirations?

To have a fulfilling career and have a family of my own.

How do you feel being a Semiconductor Active Youth Ambassador?

I feel privileged to become a SAY ambassador as it will expose me to the industry through site visits and mentors. I hope to learn as much from everyone as possible.

What is the one advice that you would like to share with your peers on the semiconductor industry?

Work hard, play harder.

What excites you in this semiconductor industry?

Due to Moore's law, the world is digitising and developing at an unprecedented rate. To support this, further development of semiconductor devices and fabrication is needed. I am excited for new technologies that may come out in the near future.

CONTRIBUTED BY

MR SAMUEL KOH
SIT-TUM Electronics and Data Engineering

Interview with
RYAN NEO

Tell us more about yourself. What are your hobbies and interest?

Hi! I'm Ryan Neo, I am currently studying in Ngee Ann Polytechnic pursuing a diploma in Engineering. I am a strong team player with excellent collaboration skills, and have a strong commitment to my work. My hobbies are playing volleyball, football, reading & sometimes drawing. I'm currently in the school's volleyball competitive team training to represent the school. I've only started playing volleyball for about a year but I've played for an outside club to sharpen my skills and gain more experience.

I think being revolved and living around technology has always made me curious and wonder how all of it functions. I've always wanted to learn and gain a better understanding of how it all works. After many considerations, I've decided that I wanted to equip myself with the skills and wanting to apply them in a real-world application which could help benefit people.

Who inspires you the most so far?

As cheesy as it sounds but I truly think my dad is someone who has inspired me so far. The reason being how he has been able to come up from dirt with his family unable to afford for his education. He's still able to come up from that, starting his own business overseas and now being able to provide our family comfortably.

How do you feel to get into a course such as IC Design that is quite niche?

I enjoy most of my time in my course although point to point soldering can be a pain sometimes. But I still enjoy the lessons being taught and I think that IC Design is applicable and is seen everywhere throughout our daily lives. Despite the course being niche, I still find that there is large demand for electronics engineers and helpful for the development of today's technology.

What are your aspirations?

My current aspiration is getting into a local university I want with my desired course. And after that, I want to be able to utilise what I've learned to start a business venture. I'm passionate in wanting to develop a world with technology that can help and provide solutions for people's problems.

How do you feel being a Semiconductor Active Youth Ambassador?

Overall I am grateful for the opportunity to represent my school and be an semiconductor active youth ambassador. I wish that I am able to encourage youths who are interested in this industry and share my experiences. I also wish to learn more about the industry from industrial leaders and learn further insights of the possibilities this industry have to offer.

What is the one advice that you would like to share with your peers on the semiconductor industry?

One advice I have for my peers on the semiconductor industry, I think it is important that all of us should be proactive in developing and trying new projects. We shouldn't constraint our ideas within a box, progressively trying to develop new innovations and become flexible with new ideas. I think doing personal projects that you're interested in, would be able to enhance your skills and knowledge better.

What excites you in this semiconductor industry?

It is fascinating that a tiny chip is so vital to so many industries, being able to create new innovations, solutions and improving existing ones. I think the future is endless with this technology and it is only limited by our knowledge which makes me ever more passionate in wanting to learn more about the industry.

CONTRIBUTED BY

MR RYAN NEO
Ngee Ann Polytechnic, Electrical and Computer Engineering

Empowering the Youth through Mentorship

Interview with JUN RONG

Tell us more about yourself.

A lifelong learner, one who seeks challenges and always believes in making things better than what I started with.

What got you into the course back in school?

My Physics teacher. He was previously in the engineering industry before he joined as an educator, and he was the one who recommended Chemical Engineering for my university course.

Who inspires you the most so far?

At every crossroad, I was very fortunate to have mentors who provided me advice or just simply hear me out at personal level. I feel that their unconditional guidance was inspirational. If I were to choose only one, it will be my Physics teacher. He was there to encourage and challenge me. As cliché

as it sounds, without him, I wouldn't be an engineer at all.

How has it been working in a semiconductor company?

At Micron, it has been a non-stop learning, dynamic, challenging and yet fulfilling career for me. Whether it is a walk in the park or an adrenaline pumped, I always believe that it is our own choice.

What is your first thought of the Semiconductor Active Youth Ambassador Program?

Thrilled! I am glad that SSIA launched this initiative to engage our younger audience. And as shared earlier, I am very fortunate to have mentors who guided me, and it is time for me to pay it forward!

What are some of the learning points that you acquired when you first joined the industry?

A growth mindset and tenacity. The semiconductor industry is ever-changing and constantly challenges the boundaries

to spark innovation. We have to learn to think in a new way, and the path to success is built on the multiple failures that have persisted on. And I believe these mindsets will serve us well in many other aspects.

What is the one advice that you would like to let young talents know about the industry?

Semiconductor industry is poised to grow to fuel the chips demand for 5G, AI and Big Data. In fact, it is an industry that thrives on innovation, critical thinking and problem solving. There is never a mundane day at work!

What still excites you in this semiconductor industry?

Technology. I am always fascinated by seeing the complex and advanced manufacturing processes of nano-centimeter chips - how millions of them are created with sophisticated machines in a cleanroom space that is classified as Class 100. (A class 100 cleanroom has 100 particles per cubic foot, which is almost 100 times cleaner than an operating theatre!)

CONTRIBUTED BY

MR LIM JUN RONG
Senior Manager, Talent Acquisition Singapore, Micron

Interview with ROY LAU

Tell us more about yourself.

I've been in the semiconductor industry for 8 years, working in various functions such as Failure Analysis, Quality, and Product Engineering. I joined ams OSRAM 5 years ago and I am presently leading the product engineering team for Vertical Cavity Surface Emitting Laser (VCSEL), a job that I enjoy tremendously.

What got you into the engineering sector?

I knew a very accomplished engineer and inventor, Freddy Boey when I was young. His inventions and work inspired me to take up the challenge in the field of engineering. Being good in Math and Science have also helped paved my career as an engineer.

Who inspires you the most so far?

I have been inspired by many people in my career at ams OSRAM. My most inspirational "Sifu" would be Joe Ng, my previous supervisor who gave me a lot of guidance when I first started on my path in leadership.

How has it been working in a semiconductor company?

It's a tough industry due to its cyclical nature and reliance on consumer spending. Technologies have a relatively

short life span that become obsolete quickly. You must constantly keep up with the changes and if you do, it is a very rewarding career.

What is your first thought of the Semiconductor Active Youth Ambassador Program?

Overall, it is a good idea. The mentors can share on the industry and the job scope so that fresh graduates can make informed choices. While we would like more people to join us, it is more important to let them know what they are getting into. Only then will we get the right talents who stay due to their interest and passion for the industry.

What are some of the learning points that you acquired when you first joined the industry?

This industry is huge with many functions that can cater to different characters and interests of a multitude of individuals. It is important to find a function that you like where self-development is possible .

What is the one advice that you would like to let young talents know about the industry?

Be open to learning and exploring things outside of your job function so that you remain visible and relevant in this fast-paced industry.

What still excites you in this semiconductor industry?

The semiconductor industry is exciting because of the many available opportunities in career and growth. When I first started, I was told that semiconductor industry in Singapore is a sunset industry. This is far from the truth as you can read of many expansions and new facilities from multiple semiconductor companies in Singapore.

CONTRIBUTED BY

MR ROY LAU
Director, Product Engineering, ams OSRAM

Navigating Unchartered Territories in my Semiconductor Industry

Selina Ooi, Head of GEO Sales, South Asia and India, STMicroelectronics started her career with STMicroelectronics as a Process Engineer after graduating with First Class Honors in Bachelor of Engineering, majoring in Communications and Electronics. Her interest in the semi-conductor industry was spurred by her final year project researching and analyzing the Silicon Transducer Membrane.

Selina held various technical and managerial roles within the company from Engineering to Field Quality, Marketing, Application and Sales. Currently, she is also the Women in Leadership Ambassador for the Sales and Marketing Organization in Asia Pacific and a Mentor to our Company's Career Booster Program.

You started out as a Process Engineer. Was STEM / Engineering a subject that you have always been keen on?

Since young, my goal was to pursue a career in a professional field that could be exciting yet challenging. It was not a common thing during my time for a woman to pursue a career as an Engineer, and I think choosing the field of Engineering for my graduate degree program, against my parent's advice was for me to prove to myself that a girl can be successful in the male-dominated Engineering field.

What were some of the challenges that you faced when you moved from a student into the workforce as an Engineer?

I had to learn that coming into the working world was different from being in school. While what I learned at school provided me the foundation and tools to be successful, the challenge was adapting and applying the theories and making them relevant and practical for the job. Living in Australia for over 10 years, during my schooling years, I had to learn to culturally adapt when I started my career with the company in Singapore. It was hard work as I wanted to make it out on my own, financially, and not depend on the family. I had to be humble, and many times, despite thinking that I know everything as an engineer, I realized I had to unlearn and relearn from experienced operators and technicians.

You moved into various functional roles from Engineer to Technical field service, Quality and then to sales in ST. How did the transition come about?

My journey in STMicroelectronics and in my career, like many others, is not a linear one. I started as a Process Engineer and after 2 years, I wanted a change and decided to leave ST for a different portfolio in marketing at a local telecommunications company. However, I did not end up starting in the new company as I received a call from STMicroelectronics a day before I started the job and decided to rejoin the company in a marketing role for Industrial and Power Supply segment sector. Looking back, I realized that I am always looking for new challenges and something exciting, to fix, to grow and to position the organization for bigger things. I must admit I did not always feel 100% ready when there were new career opportunities presented to me but instead of letting that faze me, I take it up as a challenge, for example when I accepted the Field Quality role, and it was a totally different world for me. I had to deal with difficult customers of different cultures and in different languages. There were a lot of sacrifices. I had to learn how to balance between work and family as I had to spend great amount of time in the field and with the teams in the different countries. There were days that I felt like giving up but having a supportive, caring and understanding family played a big part to keep me going. Occasional golfing also kept me in sane during those days. To gain experience and to continuously learn, sometimes in one's career, we need to be ready to make, not only, vertical upward moves but also horizontal and even take a step down. When I accepted the role in Sales, it was a big leap of faith and totally out of my comfort zone. Looking back today, this was one of the best "bungee jump" I ever did. I knew nothing about sales, pricing, quotations and its jargons then and depended heavily on the experienced team that I had. To speed up my learning curve, I even started taking Chinese language classes as it was one of my biggest challenges in the role being a Chinese in ethnicity, but not being able to speak the language. I had to learn how to interact with the Distributor partners, adapting my communication style and learning their needs to work on win-win solutions.

What are some of the experiences that resonated with you through the various roles?

All the roles I held had different challenges but to be successful, the formula is the same. It is important to remember always to be a better version of myself and recognizing that developing my leadership skill is a never-ending journey, a journey of continuous learning. I tend to learn by watching other leaders which helps me realize what works and what does not in this dynamic, challenging work environment. Listening actively and learning from my mistakes has helped me over the years. In summary, be open to changes, observe, learn, listen, and practice.

What impacted you the most in your tenure with ST so far?

I had some inspiring mentors at the beginning of my career. It is always the people. I am inspired not only by our leaders but my colleagues and the people I work with.

You have been a strong advocate for Women in Leadership in ST. What has inspired you to be a champion of this cause?

My mother. She was an independent and self-driven individual, and worked herself from a teacher to become headmistress in twenty years, while managing four children. She is indeed an amazing woman leader in my eyes. She remains my greatest inspiration and I strive to be like her.

Can you share some of the instances where you have perhaps championed this?

In ST, there are always new opportunities as long as you are willing to invest your time and take on the challenges. An example of this would the Women in Leadership program. An idea and a passing statement I made during a gathering that I would like to identify a woman leader to replace me one day when I retire that sparked the entire program that we have today at Asia Pacific Sales and Marketing level. I stepped now into the role of mentoring younger women, both technical and Sales and Marketing colleagues, developing women in leadership and drive specific initiatives for the region and the S&M organization. It is something I feel compelled to do knowing that personally, I would have appreciated having such a network and mentor in my early years, someone who could understand the challenges of a woman in a man's (technical) world.

What do you think are some of the inhibitions that women are not so inclined to be in the technical field?

This field is still very much dominated by men. Women in this field must develop a strong sense of their self-awareness, know what they really want to stay focused and not give in to our perceived mental limitations. Other than that, women must also be courageous enough to step forward and grab opportunities the same way it is presented to the male counterparts.

A mentor plays a key role in the semiconductor industry to the students and young talents.

SSIA will be launching a Youth Ambassador Program where mentors in queen bee companies will be paired with student ambassadors. How do you think a mentor should engage with the young talents since this is also something close to your heart?

Continue to encourage the young talents to be the true version of themselves. Be brave, do not be afraid to fail and be ready to pick yourself up again. It will be nice to have a job shadowing program to engage our young people even before they join the workforce and industry. Learn the best from the role model you choose.

What are some advice that you would give to anyone to explore the semiconductor industry given some of the volatility of it?

Look at it as sitting on a roller coaster ride. Hold on tight (to your dreams) and enjoy every moment of what the ups and downs bring from the exhilarating journey! Always look forward to stepping out of your comfort zone to grow.

CONTRIBUTED BY

MS SELINA OOI
Head of GEO Sales, South Asia and India
STMicroelectronics

SSIA and NEA –
Sustainability Workshop for Energy Efficiency

It has been more than 2 years since the EHS workgroup came together in a physical setting to discuss on this important topic on Sustainability. This workgroup strives to meet 2 times per year from bridging policy makers, institutions, and industry partners, to innovating solutions.

SSIA and National Environment Agency of Singapore (NEA) co-organised the Sustainability Workshop for Energy Efficiency on 24 Nov 2022, at the Lifelong Learning Institute (LLI).

SSIA's focus has always been on 3 main workstreams, namely Talent Development, Growing the Local Ecosystem and finally, Sustainability. For sustainability, the emphasis is on energy and water savings.

Fadhil from NEA shared the Energy Efficiency Fund (E2F) which helps both MNCs and SMEs to tap on resources available to support the companies on the energy efficiency journey. The Energy Efficiency journey includes **Audit** to recommend improvement measures, to **Implement** retrofits and **Monitoring** the results. E2F supports all 3 stages of the energy efficiency journey.

Till date, E2F has more than 30 projects approved, with around 2 years payback for projects and approximately 60% of annual energy reduction. SSIA hopes to see more companies coming forward with energy efficiency projects.

The Energy Efficiency Technology Centre (EETC) at Singapore Institute of Technology (SIT) was introduced by Prof Lock, sharing SIT's focus on industry

collaboration, inviting industry companies to utilise the facilities as a catalyst to develop and demonstrate energy efficiency capabilities.

BBP's CEO, Hoe Boon Chye also touched on their unique solution on cooling energy efficiency, using IoT sensors, data analytics, providing insights for controllers to make adjustments to achieve the required savings. He openly shared routes to meet MEES requirement.

The workshop culminated in a networking session for industry partners to discuss and collaborate on solutioning. SSIA will be initiating a Sustainability Committee and more will be announced in the next few months. SSIA looks forward to support our semiconductor industry in the sustainability journey.

CONTRIBUTED BY

JULIE KOH
Strategic Programs Director,
SSIA

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Technology Enabling Life

Technology for creating semiconductors is technology that makes dream products real

Shockingly groundbreaking products –
this is what semiconductor advancements bring.
Our technology produces equipment to
manufacture semiconductors,
and it makes wonders real.

TEL TOKYO ELECTRON

60 years

Tokyo Electron will celebrate its 60th anniversary on November 11, 2023.

Soitec Groundbreaking Event for Wafer Fab Extension

Soitec, a leading manufacturer of engineered substrates, held a groundbreaking ceremony for the extension of its wafer fab at Pasir Ris Wafer Fab Park on 9 December 2022. The ceremony was officiated by Minister of State for Trade and Industry Low Yen Ling and France's Ambassador to Singapore, Her Excellency, Minh-di Tang.

The 45,000 square-metre extension comprises a three-storey fab building, warehouse, administrative and utilities blocks. When it is completed in the first quarter of 2025, the extension will enable Soitec to double the production of its Silicon-on-Insulator (SOI) wafers in Singapore to two million per year at full capacity Soitec's 300mm SOI wafers are used to produce chips for smartphones, particularly in 5G communications, as well as vehicles and smart devices.

The extension has been designed to support Soitec's commitments to an energy-efficient use of resources. It will incorporate a host of sustainable features that will make the new facility a sustainable, state-of-the-art working environment.

Pierre Barnabe, Soitec's CEO said, "This groundbreaking in Singapore is another important milestone in our global development. As we celebrate our 30th anniversary this year, the expansion of our production sites both in France and Singapore will bolster our global presence, attract talents, drive value, and expand our contribution to energy savings through greater energy efficiency in electronics."

The extension of Pasir Ris in Singapore complements Soitec's investments in France and is part of its strategy to meet the increasing demand by ramping up its global annual production capacity to around 4.5 million wafers by fiscal year 2026.

In line with the extension, Soitec is also ramping up the hiring of staff to more than double is current workforce of 600 in Singapore by 2026.

An artist's impression of Soitec's wafer fab extension in Pasir Ris

CONTRIBUTED BY

soitec

Arm Flexible Access

From sensors to supercomputers, the convergence of 5G, IoT, and AI is driving multiple industries to transform. We see this transformation in IoT, retail, automotive, factories, homes, and our cities. In the market of rapid change, it's common that the product requirements undergo significant modifications several times over the course of the development of the product, resulting in constant changes to the IP needs.

Arm's silicon partners shipped a total of 29 billion Arm-based chips in 2021, additionally, more than 240 billion Arm-based chips shipped to-date, which makes Arm the global leader in the development of licensable compute technology. To help our customers innovate, we launched Arm Flexible Access program provides up-front, zero, or low cost access to a wide range of Arm IP, tools, and training depending on the tier. Experiments and design with the entire portfolio-licensing fees are only due at the point of manufacture and calculated only on the IP included in the final SoC design, which can empower your SoC design teams to experiment, evaluate and undertake projects flexibly and more cheaply.

Startups drive the economy and drive innovation. Arm works with startups across the industry, unlocking new possibilities with technologies and an environment where startups can thrive. To support startups with limited funding in the early stage and give them the freedom of movement when it is most crucial, in the design phase of a new chip, Arm has

created another program-Arm Flexible Access for Startups. Under the initiative, early-stage silicon startups in the program can obtain access at no upfront cost to training, technology, tools, and a broad swath of Arm IP–Cortex processors, Mali GPUs, Ethos NPU, interconnects, design kits, security technology, physical IP and more–to develop SoC designs or prototypes for their applications. Startups can create prototype silicon without any fees to Arm; licensing fees only start at commercial tape out and the shift to commercialization begins. In the traditional industry model for IP, licensing begins at the start. Participating startups will be able to try different ideas or pivot to meet a new opportunity.

In addition to the above program, Arm also launched Arm Academic Access. Arm Academic Access is a new research enablement model that allows academics to innovate, evaluate, design and manufacture with commercially proven Arm IP at no charge. Membership of the program is available to institutions solely for the purposes of the education, training or academic/non-commercial research. Arm will work with academics to enable access to the technology that best suits your needs.

SoC designs are becoming increasingly complex, but your design process doesn't have to be. Many users signing up Arm

Flexible Access to design and customize their own unique SoCs found that accessing IP through Arm Flexible Access were simple and easy and brought growth opportunities for their companies and organizations. Find out more about the benefits of Arm Flexible Access from the links below and build your future on Arm!

UNLOCK NEW POSSIBILITIES WITH ARM!

Discover more about Arm Flexible Access Download Product Sheet

ABOUT ARM:

Arm technology is defining the future of computing. Our energy-efficient processor designs and software platforms have enabled advanced computing in more than 240 billion chips and our technologies securely power products from the sensor to the smartphone and the supercomputer. Together with 1,000+ technology partners, we are enabling artificial intelligence to work everywhere, and in cybersecurity, we are delivering the foundation for trust in the digital world – from chip to cloud. The future is being built on Arm.

CONTRIBUTED BY

arm

Mapping Singapore's Semiconductor Industry 4.0 Landscape

Let-Lab is the innovation arm of Ultra Clean Holdings, Inc. Our vision is to accelerate the growth of sustainable, semiconductor industry 4.0 innovations into scalable ventures. After our official launch in Singapore, we instantly mapped the key players in the ecosystem to further meaningful exchanges. Let-Lab team is proud to present the Singapore semiconductor industry 4.0 map. The map aims to be a comprehensive, yet easy visual reference and one-stop shop for start-ups, companies, supporting organizations and funds in the semiconductor industry 4.0 innovation ecosystem. The map appreciates and highlights the diversity of innovators and stakeholders, standing testimony to the vibrant deep tech start-up ecosystem of Singapore. The list is shared openly and we invite you to add your company if you are in the filed but not in the list.

BACKGROUND ON SINGAPORE'S SEMICONDUCTOR INDUSTRY

Comprising of global juggernauts and an ecosystem of small and mid-sized businesses, Singapore's semiconductor industry is one of the most diverse in the region. The semiconductor industry is a key contributor to the island nation's economy, generating nearly 7% of the GDP in 2021, as reported by Straits Times. To increase its manufacturing sector by 50% by 2030, Singapore is focusing on growing the electronics industry. There are two goals for the semiconductor industry i) sustainability and ii) transformation to industry 4.0. As demand increases, semiconductor manufacturers must ensure their production materials are eco-friendly and responsibly manage waste to meet sustainability goals. Industry 4.0 transformation, driven by digital technologies like AI and 3D printing, can improve operations and achieve environmental, social, and governance goal. Let-Lab SG partners with industry partners to promote sustainable industry 4.0 innovation and reduce emissions in the semiconductor industry.

In a macroscopic view, Singapore's economic growth plan centres on consistent, long-term R&D spending. In December 2020, the government announced a $25 billion R&D budget for the next five years, a 30% increase from the previous budget. The Prime Minister, Mr. Lee Hsien Loong, stated that this would maintain Singapore's competitiveness and position as a technology and innovation hub. The government is working with businesses to improve their continuity plans and diversify their supply chains to strengthen semiconductor supply networks. It is also focusing on attracting investment from top international businesses and boosting R&D efforts in developing semiconductor technology and innovations.

Let-Lab, the innovation arm of UCT, has entered the Singapore market with the goal of empowering innovators, innovations, and accelerating their growth. Through our unique value proposition, we offer start-ups office space, a real manufacturing playground, mentoring, and guidance from industry experts to help them develop and deploy their solutions, reach product-market fit faster, and aid their scalability and sustainability.

INNOVATIONS PROPEL SEMICONDUCTOR INDUSTRY 4.0 TRANSFORMATION

As the semiconductor industry undergoes an industry 4.0 transformation, there has been a significant increase in start-ups and innovations that aid in the transformation over the past two decades. The past 6-7 years have seen a surge in start-ups in this space, though the COVID-19 pandemic did affect the growth of start-ups. However, the Singapore government has been active, responsive, and iterative during the pandemic, launching programs such as the Special Situation Fund for Start-ups (SSFS) and the improved Start-up SG Founder program to support tech start-ups. Let-Lab SG is a new entrant to Singapore and is riding the wave of growth in this space working with partners to create ventures and add more start-ups to the map.

CATEGORIZING INNOVATIONS

Some key observations we picked up while drafting the map were that there are many more technology enablers than start-ups directly involved in semiconductor manufacturing. Many of the start-ups we highlighted in the map possess technologies that allow R&D teams design and propose entirely new techniques and products, advancing real innovation in the semiconductor industry.

We have categorised the startups into i) Robotics/Automation, ii) Sensors/Optics, iii) Artificial Intelligence (AI) *(note: though AI can power every other category, for the sake of this map, we mean startups that exclusively use AI as a technology)*, iv) Augmented Reality/ Virtual Reality (AR/VR), v) Internet of Things (IoT), vi) Integrated chips (IC) Design/Architecture/Software, vii) Digitalization, viii) Video analytics, ix) Novel Materials, x) Energy, xi) Utilities.

Among the categories, we noticed that the industry has seen a rise in start-ups and innovations focused on industry 4.0 transformation, particularly in the software and robotics/automation sectors. These innovations aim to improve productivity and automate tasks and are particularly sought after by semiconductor manufacturers for their ability to speed up production processes and ensure higher quality. Singapore has established itself as a hub for artificial intelligence (AI) innovation and is the second most automated country in the world. Let-Lab's home-grown start-up, RobotAI, is a software-based company that has developed patented technology to enable human-like visual cortex and hand-eye coordination tasks for robots. RobotAI also did a joint venture with Singaporean company Akrabis to develop new solutions.

In the fields of AI, video analytics and digitalization, Let-Lab SG team is currently working on proof-of-concepts (POCs) with two highlighted start-ups, Ailytics and Aleph Technologies respectively. Ailytics is building multiple POCs with us on safety and productivity monitoring, while Aleph technologies is using their digital twin and AI expertise to improve productivity using predictions.

We also support novel materials for robotics through start-ups like Enlipsium, who provide material solutions for production and services in semiconductor industry.

FUNDING AND SUPPORTING ECOSYSTEM

Singapore's start-up ecosystem in the semiconductor industry 4.0 is supported by academic and industrial partners, which provide initial support through funds, mentoring, and pilot programs. Start-ups can seek support from tech transfer offices (TTOs) in academic and research institutes, venture building programs, and venture capital and corporate venture capital arms. TTOs of universities such as NUS Enterprise and NTUitive, as well as industry venture building programs like Singapore DeepTech Alliance and Seagate Lyve Lab, offer support to start-ups. Corporate venture capital arms like Micron Ventures and Applied Ventures, along with family offices like Goldbell and other venture capital arms and angels, also contribute to the ecosystem.

To understand the funding status and acceleration of start-ups in the field, Let-Lab analysed publicly available information on start-ups through LinkedIn and Crunchbase. While many start-ups were missing publicly available funding information, it was noted that nearly 63% of the start-ups were in the Seed stage, indicating that many are in early stages and may benefit from an accelerator like Let-Lab to help propel their growth and scale their business.

ABOUT LET-LAB AND UCT

Ultra Clean Holdings, Inc. is a leading developer and supplier of critical subsystems, components and parts, and ultra-high purity cleaning and analytical services primarily for the semiconductor industry. Let-Lab was initiated in Israel in 2018 by Mr. Agmon and launched in Singapore in 2022 headed by Dr. Viveka. Let-Lab aims to accelerate sustainable semiconductor industry 4.0 innovations into scalable ventures.

Let-Lab's year-long, unique start-up incubation programme gives access to:

i. UCT's space as a testing ground for start-ups and innovators to build proof-of-concept and deploy pilots,
ii. domain experts,
iii. potential customers,
iv. office space,
v. diverse stakeholders, ecosystem partners

in a nutshell, all resources needed to develop a deep tech venture.

If you are part of the sustainable, semiconductor industry 4.0 ecosystem, we welcome you to add yourself to the map by clicking here. Also, as Let-Lab SG is consistently seeking to expand its presence in the ecosystem, if you wish to be a part of the change, feel free to reach out to our experienced team by writing to **viveka@uct.com** or visiting **www.let-lab.com**

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Deep Tech. Deep Impact.

Singapore Industry 4.0 Ecosystem Map 2022

A comprehensive map of a thriving and nurturing ecosystem which comprises of tech transfer offices, venture builders, funding supporters, multinational companies and SMEs, for startups and innovators to benefit from.
If you are a part of the ecosystem but not here yet, feel free to add yourself to the map here

www.let-lab.com   www.uct.com

Group photo from left to right: Mr Sam Kee, EDB - Mr Chang Chin Nam, EDB - Mr Wouter Rinia, Sioux Technologies - Ambassador Anneke Adema - Ms Julie Koh, SSIA - HE Liesje Schreinemacher, Minister Foreign Trade and Development Cooperation - Mr Gary Eves, NXP - Mr Soh Leng Wan, ESG - Mr Henk Jan Jonge Poerink, Besi APAX - Ms Wampie Libon, Ministry of Foreign Affairs - Mr Paul Chia, Gallium Semiconductor - Mr Ang Wee Seng, SSIA – Ms Astrid Seegers, Netherlands Innovation Network

Small in Size, Big on Impact - Singapore and the Netherlands Semiconductor Forum

The Embassy of the Kingdom of the Netherlands in Singapore and Singapore Semiconductor Industry Association (SSIA) co-organised the Singapore and The Netherlands Semiconductor Forum on Friday the 2nd of December. The forum was a great success and attended by close to 100 participants from the semiconductor industry.

The event was opened by the Dutch Minister for Foreign Trade and Development Cooperation Ms Liesje Schreinemacher and Mr Soh Leng Wan, Assistant Chief Executive of Enterprise Singapore. It started with an overview of the sector and Singapore's Electronics Transformation Map (ITM) 2025 specifically in the sphere of microelectronics and its long-term development goals, by Mr Sam Kee, Account Manager, Semiconductors at the Economic Development Board.

In her opening speech the Minister emphasized the important role both Singapore and the Netherlands play in the global value chain: "The semiconductor sector is very much a global sector that requires cross-border strategies and collaboration and in which Singapore and the Netherlands are key players. By working together our countries can maintain global value chains and expand our position in the sector." And she provided examples of investments by and collaboration with the Dutch government: "The semiconductor sector is of significant value to our national economy. The

Netherlands is building on its strengths in collaboration with European and global partners in areas such as equipment, integrated photonics, RF and chip design. By supporting public-private initiatives, such as the 470 million euros for **PhotonDelta**, the Netherlands aims to cement and expand its position." The Minister concluded: "I'm glad we're are able to bring our two countries closer together in this sector and pleased to see Dutch companies are already part of Singapore's ecosystem and vice-versa. With this event we connect, increase our dialogue with the aim to strengthen our further cooperation."

The plenary session concluded with a panel discussion consisting of industry leaders of NXP, Besi APAC, Sioux Technologies and Gallium Semiconductor. The panelists shared their vision on the future and recognized the journey of Singapore

in expanding from manufacturing to R&D and innovation hub. The next generation semiconductors need better connection between engineering and innovation, for this collaboration with universities and research institutes is crucial, not only within national networks, but also between Singaporean and Dutch ecosystems.

Singapore and the Netherlands will continue the dialogue to find key areas for public-private collaboration and for growth of SME's and mulitinationals venturing out into the European and Southteast Asian region. The Embassy of the Kingdom of the Netherlands in

Singapore and Singapore Semiconductor Industry Association (SSIA) will work closely together with the aim of expanding and building partnerships in this sector.

ABOUT THE EMBASSY OF THE KINGDOM OF THE NETHERLANDS TO SINGAPORE

The team of the Netherlands embassy assist Dutch citizens and companies in Singapore as well as Singaporean companies who are interested in doing business with the Netherlands, as their gateway to Europe. The Netherlands has strong ties with Singapore, dating back to the 19th century. More than 1600 Dutch companies are active in Singapore, including many small and medium-sized companies. Besides trade focused activities, the Netherlands Innovation Network at the Netherlands Embassy in Singapore supports international cooperation between companies, research institutes and public authorities in the fields of innovation, technology and science, such as on next generation semiconductor.

Dutch Minister for Foreign Trade and Development Cooperation Ms Liesje Schreinemacher delivering her opening speech.

CONTRIBUTED BY

YVONNE NG
Head of Marketing and Communications, SSIA

Realtek Bluetooth Dashboard Total Solutions for e-Scooters and e-Bikes

As more e-Scooters and e-Bikes hit the roads worldwide, users need a total dashboard solution that integrates not only with the BMS but also with the user's devices. The Realtek RTL8762DK delivers an effective, power efficient, low-cost total dashboard solution that readily integrates with BMS.

BLUETOOTH DASHBOARD TOTAL SOLUTIONS

Standard dashboards for e-Bikes and e-Scooters already provide real-time speed and basic information related to GPS, navigation, and the battery. As we have discussed, better solutions, must include two things:

1. Wireless communication between dashboards and smartphones
2. Integration of the dashboard interface with the BMS

A key aspect of this type of dashboard design would include a wireless connection (i.e., Bluetooth) to facilitate smartphone - dashboard cooperation. For an effective total dashboard solution, the ideal approach would be to integrate real-time BMS data on the same dashboard that supports minimal distraction to the user. This would include access to critical information related to the battery, such as battery capacity, usage, temperature monitoring, charge remaining, and monitoring of potential over-discharge. But, again, this requires integration with BMS technology.

However, e-Scooter and e-Bike dashboard solutions such as this have proven to be challenging for several reasons. Manufacturers have encountered problems when attempting to implement comprehensive dashboard solutions, including BOM (Bill of Materials), cost, and the level of integration that can be achieved between the BMS and the dashboard.

Figure 2 - Combining the new RTL8762DK with the RL8762CMF Intelligent BMS provides a total dashboard solution that is reliable and safe. Image provided courtesy of Realtek.

A POTENTIAL SOLUTION FOR BMS DASHBOARDS FROM REALTEK

The Realtek RTL8762DK, shown in Figure 1, is an ultra-low power SOC (System-on-Chip) designed for Bluetooth 5.1 low-energy applications -- and an excellent option for a total solution that links allows wireless connection between a dashboard and smartphone while providing real-time data from the BMS.

In addition, the RTL8762DK has a low-energy PMU (Power Management Unit) to ensure efficient use of power while in use or on standby.

Realtek's RL8762CMF Intelligent BMS not only effectively manages the battery system but allows users access to receive notifications related to battery usage and pack temperature on their dashboards. Intelligent BMS also can record battery pack charge and discharge time history; battery pack over-discharge monitoring is a key part of the total dashboard solution.

REALTEK FOR BLUETOOTH

CONTRIBUTED BY

⚙ REALTEK

Figure 1 - The Realtek RTL8762DK supports various modes of functionality for e-Bike and e-Scooter dashboards. Image provided courtesy of Realtek.

18th International Conference on Modelling and Analysis of Semiconductor Manufacturing (MASM) in Singapore

Travers Lim (SEMI), Koen de Backer (Micron), Peter Lendermann (D-SIMLAB Technologies), Ang Wee Seng (SSIA)

The 18th International Conference on Modelling and Analysis of Semiconductor Manufacturing (MASM), held during Dec. 11-14, 2022 at Marina Bay Sands in Singapore, and supported by SEMI Southeast Asia and SSIA, gathered researchers and practitioners from around the world to exchange ideas and industrial innovations on modelling and analysis of complex systems for Smart Manufacturing.

The MASM Conference is fully contained within the Winter Simulation Conference (WSC), the world-leading conference for Discrete Event Simulation, chaired by Peter Lendermann from D-SIMLAB Technologies

in 2022. It covers not just simulation but a much wider range of techniques and approaches that also include optimisation, scheduling, queueing theory, process control, data analysis and machine learning, and features a comprehensive programme ranging from state-of-the-art research to case studies demonstrating the relevance of these techniques for Smart Manufacturing. 27 Research Papers and 11 Industrial and Commercial Case Studies were presented.

Koen de Backer, VP Smart Manufacturing & Artificial Intelligence at Micron Technology, gave the MASM keynote on "Industry 4.0 Innovation in Semiconductor Planning and Operations". He introduced the evolutionary steps

of planning and scheduling systems to support smart manufacturing and digital transformation, leading to streamlined planning and scheduling to drive productivity improvement and demand satisfaction using digital twins, optimisation and artificial intelligence.

A MASM panel discussion brought together industry representatives and academic researchers to discuss the role of industry-academia collaborations and recommended new research issues to be jointly investigated. Among those are questions such as how to

- Further enhance the quality (and as such the applicability) of integrated fab simulation models, and the degree of automation for their generation, verification, validation and maintenance,
- Further decrease simulation run times,
- Intelligently navigate through a complex search space in a simulation-based optimisation of fab settings.
- Use fab simulation models as testbed for machine-learning based material flow control modules.

During the panel discussion it was also highlighted that software solution providers should be involved more closely in this ecosystem to make sure that new solution approaches will be properly incorporated into semiconductor manufacturers' IT landscapes and made more sustainable.

This year's MASM Conference will be held during 10-13 Dec, 2023 in San Antonio TX.

MASM panel discussion with participants from France, Germany, USA, Taiwan and Singapore

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Innovative Technology

Prosemi Pte. Ltd. ("Prosemi") has opened a new 26,000+ square foot facility dedicated to exclusive large-scale electronic component testing. Based in Singapore, Prosemi is a subsidiary of Fusion Worldwide, the premier global open market sourcing distributor for electronic products.

Established in 1998 and acquired by Fusion Worldwide in February 2022, Prosemi has built a reputation among the world's largest CMs and OEMs for testing electronic components and providing baking, tape and reel, and IC programming services. This announcement furthers Prosemi's dedication to investing in new technologies and capabilities that ensure both quality and speed for electronic component testing.

"The investments in Prosemi's new facilities reflect our dedication to creating opportunities for career growth, advancing knowledge in authenticity verification and expanding Prosemi's capabilities and performance standards," said Paul Romano, COO, Fusion Worldwide. "With the move, we're furthering our contribution to the local Singapore economy and expanding our global pool of talent."

Newly available testing services include JTAG boundary-scan (IEEE Std 1149.1) for evaluating the special embedded logic of integrated circuits, along with Prose-

mi's already expansive suite of service offerings. Future expansion will include temperature range testing, high and medium power management IC testing and additional analytical analysis through CSAM. The facility has also increased and now maintains a large inventory of custom and standard carrier pockets and tapes to support tape and reeling for a broad range of components.

The new facility allows for greater capacity and capabilities, which support advanced testing technologies and accelerates the companies' ability to provide innovation to customers around the world. Together, Fusion and Prosemi maintain one of the largest die databases in the industry, as well as one of the largest databases of inspection and analysis of electronic components.

With this expansion, Prosemi will continue to provide expedited turnaround time for electronic component testing. Prosemi's facility reduces testing lead times to just two to seven days. Combining this vital accelerated testing window with Fusion Worldwide's 20-plus years of experience and commitment to quality standards, customers can more confidently navigate fluctuations in supply and demand.

In addition, Prosemi's wide range of service offerings are tailored to meet all of their customer bases' needs. This

includes authenticity testing, such as detailed external visual inspection, solvent test for remarking and resurfacing, radiological inspection, lead finish evaluation, decapsulation internal analysis, Scanning Electronic Microscopy up to 100,000x with Energy Dispersive X-Ray Analysis (EDX), Fourier Transform Infrared Spectroscopy, solderability, and comprehensive electrical testing. Prosemi also offers services such as Tape and Reel, Baking, IC Programming, Laser Marking and Sorting.

Additionally, all Fusion Worldwide warehouses are ESD compliant, ANSI ESD S20.20, AS9120, AS6081, ISO 9001 and ISO 14001 certified to support a greater range of industries and technologies.

"Our dedication of resources to better facilities and technologies, combined with the knowledge and expertise based on our extensive database of test results and analyses, demonstrates our devotion to offer best solutions to support our customers," said SC Lee, Supply Chain Quality Director for APAC, Fusion Worldwide.

SCAN QR CODE FOR MORE DETAILS

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FUSION WORLDWIDE

Crossword

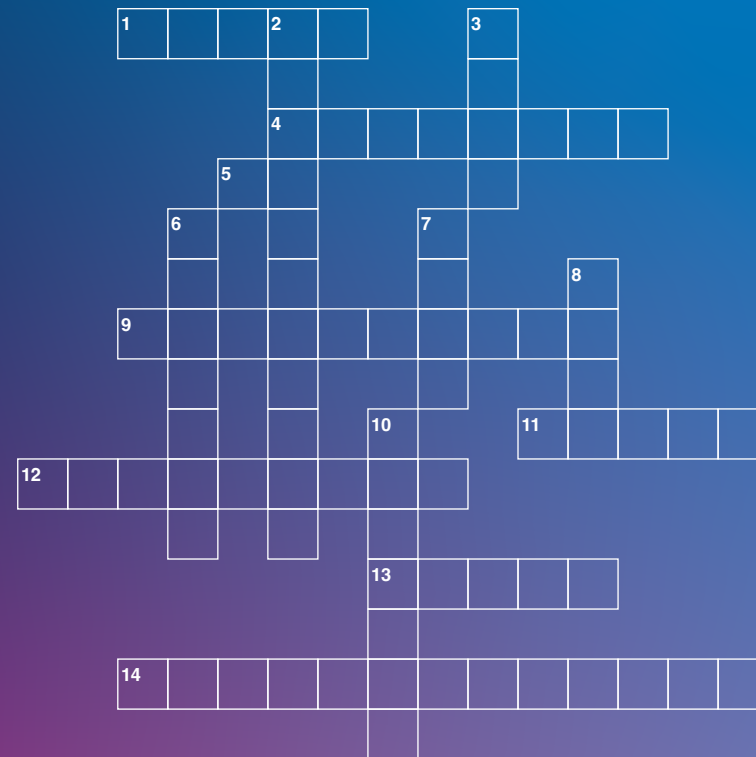**SSIA**
Singapore Semiconductor Industry Association

Across
1. Holds your ice cream
4. Someone who designs, fabricates, tests, assembles, and packages semiconductor devices
5. A set of electronic circuits on a chip
9. A sector that produces cars
11. What you eat fish with
12. A tiny wafer of semiconductor material
13. Also known as a boule
14. A material that has conductivity between a conductor and an insulator

Down
2. Devices that use electricity
3. A unit prefix meaning "one billionth"
6. A semiconductor manufacturer that makes chips for other companies
7. Facts and statistics collected together for reference or analysis
8. Abbreviation of technology
10. A common semiconductor element

Word Search

Find the 10 words hidden in this grid: engineer, chip, design, silicon, tech, innovate, green, wafer, additive, data.
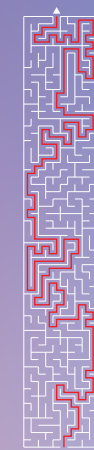
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J E N S P R O R A V Q M
P I A C N G E T H W A L
I N N M H U T S O G R E
T A E N G I N E E R I F
M A T F O E P B D E T I
F D M R Q V E X T E C H
A D U D A T A O M N E M
V I Y E N U P T E Z M A
M T U S S W A F E R O V
S I L I C O N B U W O M
A V E G U L E C T H O G
O E R N S P E X Y E L T
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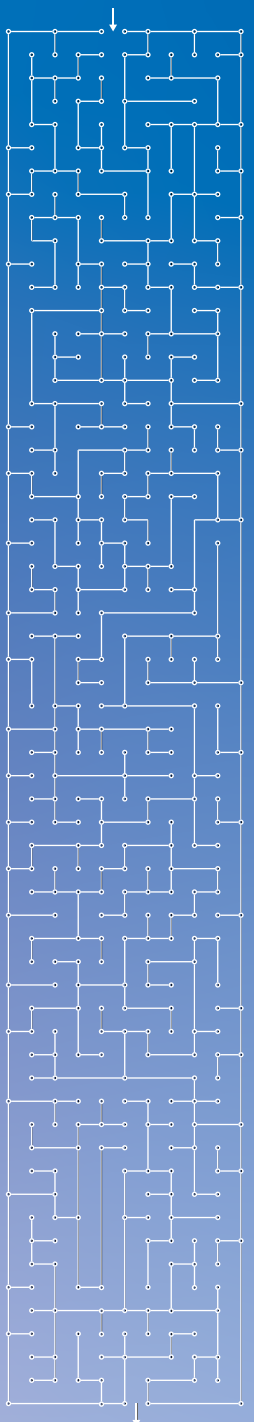
Solutions:

1. wafer
2. electronics
3. nano
4. engineer
5. ic
6. foundry
7. data
8. tech
9. automotive
10. silicon
11. chips
12. microchip
13. ingot
14. semiconductor

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